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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/704,724	11/03/2000	Yoshiharu Sasaki	Q61576	7226

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EXAMINER

POKRZYWA, JOSEPH R

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/704,724	SASAKI ET AL.	
	Examiner	Art Unit	
	Joseph R. Pokrzywa	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/14/06 has been entered.

Response to Amendment

2. Applicant's amendment received on 3/15/06 has been entered and made of record. Currently, **claims 1-13** are pending.

Response to Arguments

3. Upon review of the reference of Kakutani *et al.* (U.S. Patent Number 6,356,358), which was cited in the Office action dated 12/15/05 under 35 U.S.C.102(e) as anticipating independent claims 1 and 2, the examiner notes that the reference still can be interpreted as teaching the current claims, as amended.

4. Applicant's arguments filed 3/15/06 have been fully considered but they are not persuasive.

5. The examiner notes that the currently, claim 1 requires that "the recording step includes offsetting, either upstream or downstream, in the sub-scanning direction, a start position for

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recording one of at least two colors **relative to a start position for recording other one of the said at least two colors** in the sub-scanning direction”, wherein the newly added feature is in bold. As read in column 7, lines 32-65 and seen in Fig. 5(A), four discharge heads 61-64, which correspond to the black, cyan, magenta, and yellow heads, respectively, each contain an array of nozzles 100-103. Further, as read in column 9, lines 26-33, Kakutani states that “a group of preceding nozzles 100, 102,...receive drive signals at an earlier timing by d/v [second] than a group of following nozzles 101, 103... Here, d [inch] denotes a pitch between the two nozzle groups in the head 61(see Fig. 5(A)), and v [inch/second] denotes the scanning speed of the head. A plurality of dots formed by one nozzle array are accordingly arranged in alignment in the sub-scanning direction.” Thus, the nozzles 100 and 102 have an offset start position in relation to the nozzles 101 and 103. Further, nozzles 100-103 are within the print head for black ink 61. With this, as seen in Fig. 5(A), the start position of the nozzle in the yellow print head 64 that is equivalent to the nozzle 103 is offset downstream, in the sub-scanning direction, relative to the start position of nozzle 102 in the black print head 61. Continuing, as read in column 11, lines 51-66, and seen in Fig. 7(A), Kakutani states that “a first sub-scan feed moves the nozzles in the sub-scanning direction by the sub-scan feed amount L (4 dots)... The offset F of the nozzles after the first sub-scan feed is accordingly 1 (see Fig. 7(A)). Similarly, the position of the nozzles after the second sub-scan feed is $\Sigma L (=8)$ dots away from the initial position so that the offset F is 2.” Thus, for each sub-scan, a start position of the nozzles are offset in the sub-scanning direction. Therefore, Kakutani can be seen as offsetting, either upstream or downstream, in the sub-scanning direction, a start position for recording one of at least two

colors relative to a start position for recording other one of the said at least two colors in the sub-scanning direction, as currently required in claim 1.

6. Therefore, the rejection of **claim 1**, as cited in the Office action dated 12/15/05 under 35 U.S.C.102(e) as being anticipated by Kakutani *et al.*, is maintained and repeated in this Office action. Similarly, for the same reasons discussed above, the rejection of **claim 2**, as cited in the Office action dated 12/15/05 under 35 U.S.C.102(e) as being anticipated by Kakutani *et al.*, is also maintained and repeated in this Office action.

Claim Rejections - 35 USC § 102

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. **Claims 1-11** are rejected under 35 U.S.C. 102(e) as being anticipated by Kakutani *et al.* (U.S. Patent Number 6,356,358, cited in the Office action dated 12/15/05).

Regarding **claim 1**, Kakutani discloses a recording method (see abstract) comprising providing a recording head which projects a plurality of recording spots on a recording medium (see Figs. 2, 5A, and 5B, column 2, line 51-column 5, line 17), and recording, by the projected recording spots, a plurality of colors on the recording medium in both a main scanning direction and a sub-scanning direction perpendicular to the main scanning direction (column 3, line 25-column 4, line 56), wherein the recording step includes offsetting, either upstream or downstream, in the sub-scanning direction, a start position for recording one of at least two colors relative to a start position for recording other one of the said at least two colors in the sub-scanning direction (see Figs. 5A, 7A, 7B, and 26, column 9, lines 2-37, and column 11, lines 6-

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column 12, line 55), and further wherein an amount of the offsets is within the range from one spot to the number defined such that total number of spots in the sub-scanning direction subtracts one spot (see Figs. 7A, 7B, and 26, column 11, lines 6-column 12, line 55, and column 16, lines 48-53).

Regarding **claim 2**, Kakutani discloses a recording method (see abstract) comprising providing a recording head which projects a plurality of recording spots on a recording medium (see Figs. 2, 5A, and 5B, column 2, line 51-column 5, line 17), and recording, by the projected recording spots, a plurality of colors on the recording medium in both a main scanning direction and a sub-scanning direction perpendicular to the main scanning direction (column 3, line 25-column 4, line 56), wherein the plurality of colors to be recorded are four colors black, cyan, magenta, and yellow (column 6, line 35-column 7, line 18), wherein the step of recording includes offsetting, either upstream or downstream, in the sub-scanning direction (see Figs. 5A, 7A, 7B, and 26, column 9, lines 2-37, and column 11, lines 6-column 12, line 55), a start position of each color, for recording by the recording head in the sub-scanning direction, the start position of one of said plurality of colors being different from the start positions of another colors of said plurality of colors within a range from one spot to a number defined such that total number of spots in the sub-scanning direction subtracts one spot (see Figs. 5A, 7A, 7B, and 26, column 9, lines 2-37, column 11, lines 6-column 12, line 55, and column 16, lines 48-53).

Regarding **claim 3**, Kakutani discloses the method discussed above in claim 2, and further teaches that a start position for recording a first one of the plurality of colors is offset substantially by one spot (see Fig. 26), a start position for recording a second one of the plurality of colors is offset substantially by two spots (see Figs. 7A and 8A), and a start position for

recording a third one of the plurality of colors is offset substantially by three spots (see Figs. 18 and 19).

Regarding **claim 4**, Kakutani discloses the method discussed above in claims 1-3, and further teaches that the step of recording includes offsetting the projected spots, in correspondence with image data to be projected in the sub-scanning direction, by same amount in an opposite direction of the respective start position which is offset either *downstream* or upstream in the sub-scanning direction (see Figs. 7A, 7B, and 26, column 11, lines 6-column 12, line 55).

Regarding **claim 5**, Kakutani discloses a recording apparatus (see Figs. 1-6) comprising a recording head having a plurality of recording elements arranged in a two-dimensional pattern having both a main scanning direction and a sub-scanning direction perpendicular to the main scanning direction (see Figs. 2, 5A, and 5B, column 2, line 51-column 5, line 17), the recording head being configured to record a plurality of colors on a recording medium with spots that key image information to the respective recording elements (column 6, line 35-column 7, line 31), and a controller which controls the recording head so as to implement the recording method recited in claim 1 (column 6, lines 35-62, and column 8, lines 9-67).

Regarding **claim 6**, Kakutani discloses a recording apparatus (see Figs. 1-6) comprising a recording head having a plurality of recording elements arranged in a two-dimensional pattern having both a main scanning direction and a sub-scanning direction perpendicular to the main scanning direction (see Figs. 2, 5A, and 5B, column 2, line 51-column 5, line 17), the recording head being configured to record a plurality of colors on a recording medium with spots that key image information to the respective recording elements (column 6, line 35-column 7, line 31),

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and a controller which controls the recording head so as to implement the recording method recited in claim 2 (column 6, lines 35-62, and column 8, lines 9-67).

Regarding *claim 7*, Kakutani discloses a recording apparatus (see Figs. 1-6) comprising a recording head having a plurality of recording elements arranged in a two-dimensional pattern having both a main scanning direction and a sub-scanning direction perpendicular to the main scanning direction (see Figs. 2, 5A, and 5B, column 2, line 51-column 5, line 17), the recording head being configured to record a plurality of colors on a recording medium with spots that key image information to the respective recording elements (column 6, line 35-column 7, line 31), and a controller which controls the recording head so as to implement the recording method recited in claim 3 (column 6, lines 35-62, and column 8, lines 9-67).

Regarding *claim 8*, Kakutani discloses a recording apparatus (see Figs. 1-6) comprising a recording head having a plurality of recording elements arranged in a two-dimensional pattern having both a main scanning direction and a sub-scanning direction perpendicular to the main scanning direction (see Figs. 2, 5A, and 5B, column 2, line 51-column 5, line 17), the recording head being configured to record a plurality of colors on a recording medium with spots that key image information to the respective recording elements (column 6, line 35-column 7, line 31), and a controller which controls the recording head so as to implement the recording method recited in claim 4 (column 6, lines 35-62, and column 8, lines 9-67).

Regarding *claim 9*, Kakutani discloses the method discussed above in claim 1, and further teaches that a start position for one of the plurality of colors is offset relative to each of the other plurality of colors (see Figs. 7A, 7B, and 26, column 11, lines 6-column 12, line 55).

Regarding **claim 10**, Kakutani discloses the method discussed above in claim 9, and further teaches that the offset between colors is less than 50 micrometers (column 1, lines 19-60, and column 9, line 46-column 10, line 24, whereby a resolution D of 720 dpi yields an offset of approximately 35 micrometers, as seen in Fig. 26, which is less than 50 micrometers).

Regarding **claim 11**, Kakutani discloses the method discussed above in claim 1, and further teaches that the recording head comprises a laser printer head (column 28, line 29-column 29, line 16, whereby a laser print head would be included in “any recording apparatuses that use a recording head having plural arrays of dot-forming elements”).

Claim Rejections - 35 USC § 103

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. **Claims 12 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kakutani *et al.* (U.S. Patent Number 6,356,358, cited in the Office action dated 12/15/05) in view of Mackin *et al.* (U.S. Patent Number 5,262,937, cited in the Office action dated 12/15/05).

Regarding **claim 12**, Kakutani discloses the method discussed above in claim 1, and further teaches that the recording head comprises a laser printer head (column 28, line 29-column 29, line 16, whereby a laser print head would be included in “any recording apparatuses that use a recording head having plural arrays of dot-forming elements”). However, Kakutani does not expressly state if the recording head comprises at least one of a thermal head and a laser printer head. Mackin teaches of a recoding apparatus that uses plural arrays of dot forming elements that comprises a thermal head and a laser print head (column 3, lines 1-40).

Kakutani & Mackin are combinable because they are from the same field of endeavor, being printing systems that print color dots using an array of elements within the print head. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the teachings of Kakutani within a thermal laser printer of Mackin. The suggestion/motivation for doing so would have been that the system of Kakutani would be usable in various printing devices, making the system more readily available, since as recognized by Kakutani in column 28, line 29-column 29, line 16, the “present invention is further applicable ... to any recording apparatuses that use a recording head having plural arrays of dot-forming elements”. Therefore, it would have been obvious to combine the laser thermal printer teachings of Mackin with the system of Kakutani to obtain the invention as specified in claim 12.

Regarding *claim 13*, Kakutani discloses the method discussed above in claim 1, but fails to expressly disclose if the recording head includes multiple spot channels recording plural colors in a same place. Mackin discloses a recoding apparatus that uses plural arrays of dot forming elements, whereby the recording head includes multiple spot channels recording plural colors in a same place (column 3, lines 1-40, and column 5, lines 1-37).

Kakutani & Mackin are combinable because they are from the same field of endeavor, being printing systems that print color dots using an array of elements within the print head. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the recording head of Mackin with the system of Kakutani. The suggestion/motivation for doing so would have been that the system of Kakutani would conform to well known standards of printing, whereby multiple colors can be printed by using multiple spot channels in a print head, so that plural colors are recorded in a same place, as discussed by Mackin in column 2,

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lines 7-55. Therefore, it would have been obvious to combine the laser thermal printer teachings of Mackin with the system of Kakutani to obtain the invention as specified in claim 13.

Conclusion

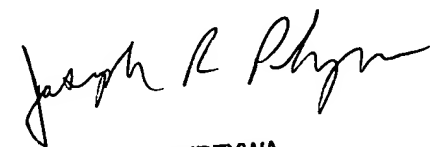
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joe Pokrzywa whose telephone number is (571) 272-7410. The examiner can normally be reached on Monday-Friday, 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward L. Coles can be reached on (571) 272-7402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Joseph R. Pokrzywa
Primary Examiner
Art Unit 2625

jrp



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